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**Contributions toward a Monograph of the NOCTUIDÆ of
Temperate North America.***

Revision of the species of *Oncocnemis*.

BY JOHN B. SMITH.

ONCOCNEMIS Lederer.

Noct. Eur. 94, 1857.

A free translation of Lederer's characterization of the genus is as follows :

Moderate in size, wing form of *Cladocera*, but more slender, vestiture smoother.

Collar and thorax rounded, vestiture close, hairy, with an admixture of flattened scales, without tuftings. Front not produced, vestiture short. Palpi ascending, very slightly exceeding the vertex, the vestiture somewhat divergent, terminal joint short, obtuse, horizontal. Eyes naked, lashed. Tongue spiral; antennæ filiform, in the males of § A lengthily, in those of § B very shortly ciliate. Breast and femora with fine, thin, vestiture; tibiæ closely scaled or with rather sparse divergent vestiture, the anterior short, with a stout claw at tip. Abdomen closely scaled, in the female obtusely pointed with a very short, usually somewhat exerted ovipositor; harpes of male slender, somewhat curved, the upper end of tip rather acute, the lower rounded.

Primaries moderately widening outwardly, the apex and anal angle somewhat rounded; ash-gray, iron-gray, or reddish luteous, with the ordinary Noctuid maculation, which is, however, rather delicate and sometimes confused. Ordinary spots small. Fringes entire, unicolorous, like the surface of wings, somewhat glistening. Secondaries light ashen gray, or yellowish gray, with somewhat diffused darker margin, which on the underside is limited by a narrow line and therefore seems better marked.

* For introductory remarks to this series of papers see Ent. Amer. v, 105, June, 1889.

The imagos fly in the Ural and Altai regions in the evening at flowers.

There are but four European species, and the genus there seems a compact one. To include our species the definition will have to be somewhat extended, since there are numerous species showing several different types of maculation and considerable difference in habitus. Essentially the structural portion of the definition applies well enough to our species. In some, however, the eyes are not very distinctly lashed, and in a very fair proportion there is a distinct, though never prominent posterior tuft to the thorax. There is some little difference in wing form as well, making the genus a somewhat loose assemblage, or a series of poorly limited groups which are themselves rather compact.

The essential characters are the armed fore tibia, lack of other tibial armature, the more or less evidently lashed eyes, unmodified front and rather smooth vestiture.

The genitalia of the males, so far as they have been studied, are of the same type. To Lederer's characters, which in general apply to our own species as well, may be added that from the lower margin of the harpe, and about its middle arises a corneous clasper somewhat variable in length and form, but rarely much curved and very rarely reaching beyond the upper margin of the harpe.

The first series of species, which in structure and habitus perhaps is nearest to the European, is readily distinguished by yellow secondaries, the margin broadly black. Three species are referable here. The second has the secondaries banded, white and black, and is readily recognizable by that character alone. The species are somewhat broader winged than usual. The other species have the secondaries white or fuscous, with a more or less definite outer dark margin, variable also in width.

Separated very distinctly from the others is *atrifasciata*, which is unique by the broad, black, contrasting, median space of primaries. The secondaries are black, white basally, black beyond the middle. It is more robust in appearance than the preceding, the collar is somewhat marked medially and the thoracic tufting is evident. The genus *Metahadena* was created by Mr. Morrison for this species, but Mr. Grote properly suppressed it.

The remaining species form two distinct series—in the one the normal maculation is present—in the other the median lines are lost,

the claviform becomes a prominent feature and the ordinary spots are sometimes confluent, the orbicular becoming long and narrow.

In the first series the species are not very easily separable into definite groups, though they afford some differences.

Terminalis differs from all here in the small markings, the broad dark terminal shade of primaries and the broad black margin of secondaries.

In some of the species of which *levis* and *augustus* afford good illustrations, the fringes are unusually long, the maculation is distinct, the median lines more or less evidently geminate, the outer darker border of secondaries somewhat defined. The species are gray, with a more or less distinct luteous shading.

In the remaining species of this first series it is difficult to form groups without raising each species to that rank. There are scarcely two, and certainly no more than two species that agree very closely in any but the generic characters, and the species *homogena* may be, therefore, very appropriately selected to typify the group. The only species perhaps separable with any justice is *saundersiana*, which is unique by the very even and very distinctly geminate median lines.

Of the second series, in which the median lines are lost, the orbicular is elongate and the spots often fused, three groups are readily marked.

Group *Chandleri* contains those species in which the s. t. line is preceded by a series of sagittate black spots set in a whitish areole.

Group *Cibalis* contains two species which are distinguished by a very evident, even, broad, dark shade preceding the s. t. line, and the primaries are also somewhat more produced apically, while the body appears slighter.

Finally, *atricollaris* is typical of a group in which there is a black streak from the reniform outward at least (*griseicollis*), or extending through the centre of the wing from base to outer margin.

In tabular form the series are distinguishable as follows:

- | | |
|--|---------------------|
| 1.—Secondaries yellow..... | Group HAYESI. |
| 2.—Secondaries black banded..... | Group FASCIATA. |
| 3.—Secondaries white or fuscous..... | 4. |
| 4.—Median lines distinct or readily traceable..... | 5. |
| Median lines lost, maculation longitudinally confused..... | 9. |
| 5.—Median space of primaries discolorous, black..... | Group ATRIFASCIATA. |
| Median space concolorous..... | 6. |

- 6.—Fringes unusually long, dark outer border of secondaries defined.....7.
 Fringes normal; dark outer border of secondaries indefinite8.
 7.—Terminal region of primaries darker, the lines narrow, ordinary spots small.

Group **TERMINALIS**.

Terminal region of primaries not darker; maculation normal.

Group **LEVIS**.

- 8.—Maculation and color diverse; contains all species not definitely referable elsewhere.....Group **HOMOGENA**.
 9.—S. t. line preceded by a series of black, sagittate dashes set in a pale areole.

Group **CHANDLERI**.

S. t. line preceded by an even dark shade; no dashes.....Group **CIBALIS**.

Primaries with a longitudinal black shade from base or from reniform to outer margin.....Group **ATRICOLLARIS**.

Oncocnemis aterrima Grote is an *Heliothid* allied to *Melicleptria*.

Group **HAYESI**.

Secondaries with base yellow, outer margin broadly black.

Three species are referable to this group, very similar in appearance at first sight, and yet abundantly distinct and easily separable. The yellow secondaries of course form the most striking characteristic, but the resemblance otherwise is close, the genitalia of the male being often the same in pattern though differing in detail.

Hayesi differs at once from all the others by lacking the claviform. The ground color is dull luteous brown, paler than either of the other species, the transverse lines distinct, the t. p. line outwardly denticulate on the veins, s. t. line preceded by a distinct dusky shade.

Dayi has the claviform distinct, the transverse lines easily traceable, t. p. line even. The ordinary spots are well defined, moderate in size, the orbicular round, the reniform with a pale shade beyond to the t. p. line, which is characteristic. On the underside the terminal space of primaries is whitish or pale powdered—a peculiarity of this species, the black band on the other species extending to the margin.

Mirificalis is usually a trifle smaller than the other species. The claviform is distinct, a black line connecting it with base. The t. a. line is marked only on costa. The orbicular, unlike the other species, is elongate, oval, not round; the reniform is small, narrow, neatly defined. The other characters will be given with the species.

In tabular form the differences are as follows:

Orbicular round; reniform large.

T. p. line single denticulate on veins; claviform wanting.....**hayesi**.

T. p. line geminate, even; claviform present.....**dayi**.

Orbicular elongate, oval; reniform small.....**mirificalis**.

O. hayesi Grt., Bull. Buff. Soc. N. Sci. i, 106, pl. 3, fig. 13, 1873.

Head thorax and primaries a dull luteous gray, powdery, markings of primaries fuscous brown. Basal line visible, faint, single; t. a. line single, outwardly oblique from costa, outwardly and roundedly exerted on the interspaces and sometimes dentate in the cell; t. p. line single, outwardly curved over the cell, somewhat incurved in the submedian interspace, outwardly dentate on the veins. Through the outer portion of the median space is a broad, distinct, upright, or only slightly curved transverse shade, which rarely becomes faint enough to cause a doubt as to its presence. The ordinary spots are large and rather vague; the orbicular round, faintly pale ringed with centre of ground color of primaries; the reniform is more indefinite, broad, also pale ringed and with concolorous centre; beyond the t. p. line the s. t. space is paler than ground color, the veins marked with fuscous, rapidly darkening near the s. t. line and forming a distinct dusky preceding shade; s. t. line powdery, irregularly dentate, nearly parallel to outer margin, paler, marked principally by the dark preceding shade; terminal space of ground color or a trifle darker; a narrow, more or less interrupted terminal line. Fringes concolorous with primaries, with a dusky line at base. Secondaries yellow, with a broad, black outer margin. Beneath pale straw yellow, with broad black outer margin on each wing; primaries paler. Abdomen rather clear luteous. Expands 1.12—1.25 inches; 28—32 mm.

Hab.—British Columbia, Colorado, Nevada Co., Cal. (Sept.).

The species is readily recognized by the superficial characters already pointed out. The genitalia of the ♂ are also distinctive. The harpes are elongate, the inferior margin rounded and oblique toward tip, where they are obliquely truncate. The clasper is corneous, from about the middle of inferior margin, dilated at middle, then narrowing rather suddenly to a long acute tip.

The species seems the least common of this group.

O. dayi Grt., Bull. Buff. Soc. N. Sci. i, 105, 3, fig. 8, 1873; Bull. U. S. Geol. and Geog. Surv. iii, 116.

Head, thorax and primaries mixed brown and gray, the shades rather sharply contrasted and not entirely constant. Primaries with basal line distinct, black, followed by a narrow pale line, more or less distinct according as the specimen is well or ill marked. Basal space else fuscous brown to the t. a. line. T. a. line not very distinct, geminate, the included space pale, very irregularly dentate and angulate, its general course outwardly oblique. The black edging to the t. a. line is fragmentary and partly on each side of the pale central space. T. p. line geminate, brown or black, the included space pale; very strongly exerted over the cell and there even; somewhat incurved in submedian interspace and there somewhat irregular. Between the ordinary spots the median space is darker, the broad shade thus inaugurated narrowing suddenly below vein 2. In bright specimens the inferior part of median space and the upper part to the orbicular is ashen gray, in dark specimens it is obscure fuscous brown and all intermediate shades occur. The claviform is distinct and usually pale, variable in size, as the median space is broader or narrower. Orbicular round, moderate in size, black ringed, followed by a pale ring, the centre brown or fuscous. Reniform moderate, normally shaped, distinct, with a narrow black margin, followed

by a broader pale ring, the centre red-brown or fuscous. Beyond the reniform to the t. p. line is a characteristic pale shade. The s. t. space darkens somewhat to the very irregular, powdery white s. t. line, which is preceded by a series of black, sagittate interspaceal dashes. Beyond the s. t. line the narrow terminal space is more or less powdery to the narrow blackish terminal line. Fringes long, pale, cut with fuscous, a fuscous line at base. Secondaries yellow, with a broad black outer margin. Beneath yellow, with broad black marginal band. Primaries paler, the extreme outer margin with white powderings. Head and thorax concolorous with primaries, head with crest between antennæ dusky; collar with a black and pale central line and pale tipped. The patagiæ are also more or less black powdered. Abdomen dull blackish gray. Expands 1.00—1.16 inches; 25—29 mm.

Hab.—Colorado.

The specimens vary quite considerably in brilliancy and details of maculation, the species still retaining its distinctive appearance however. Its peculiarities are elsewhere pointed out.

The genitalia of the male are well marked: the harpes are tolerably equal to near tip then obliquely rounded above, forming a rather acute angle inferiorly, the clasper corneous, stout at base, tapering rather suddenly to an acute point and inserted at lower margin rather close to tip.

The species seems not common.

O. mirificalis Grt., Bull. Surv. 5, 207.

Head, thorax and primaries dull fuscous brown. Primaries with basal line wanting. T. a. line marked only on costa, extending obliquely outward and not traceable below the median vein; a narrow, longitudinal black line from base to the narrow, loop-like claviform, which is defined by a narrow black line and a somewhat broader whitish interior ring; centrally it is concolorous with the primaries. The t. p. line is rather indistinct, single, broadly curved over the cell and incurved below the median vein. The orbicular is elongate oval, narrowly black ringed then with a broader white ring, the centre dusky. Reniform narrow, small, upright, neatly defined with black and white rings leaving a narrow, central, fuscous line. A broad black dash connects the two spots. Beyond the t. p. line and forming its outer margin is a rather broad, pale, or whitish shade, variably distinct, from which the s. t. space becomes darker to the very irregular, narrow whitish s. t. line. This line is preceded by a series of more or less distinct sagittate black dashes and followed by a more indistinct series of black dots, sometimes not easily visible in the dark terminal space. A dusky terminal line. Fringes fuscous, cut with darker brown, a pale line at base. Secondaries yellow, with a broad black outer margin. Beneath all wings yellow, with broad black outer margin. Collar with a black transverse line inferiorly. Abdomen yellowish fuscous. Expands 1—1.12 inches; 25—28 mm.

Hab.—Nevada, California (Nevada County, September).

Easily recognizable by the form of the ordinary spots.

The genitalia of the male are somewhat peculiar. The harpes are subequal, slightly curved, the tip truncate, the superior angle blunt. The corneous clasper arising rather beyond the middle from the thickened inferior margin is straight to near the tip, where it abruptly terminates in a very small, curved, acute corneous point, differing thus essentially from the other species in this section.

The species seems locally not uncommon.

Group FASCIATUS.

The salient feature of this group is found in the maculation of the secondaries which are fasciate, instead of merely with an indefinite outer band. Here the base is smoky, limited by a black band, beyond this a white band extends to the broadly black margin.

The two species referred to here are very different in appearance and in size. The typical species—*fasciatus*—is larger, heavier, dull fuscous gray in color, easily recognized by a white shade beyond the t. p. line, which, joining the central white band of secondaries in the spread insect, gives the appearance of a common white band.

Tenuifascia, as its name suggests, has the white band of secondaries very narrow. The species is much smaller, the wings comparatively shorter and broader than in the other species of the genus. Both species are based on single specimens, in each case a female. The discovery of the male and the form of the genitalia as compared with the other species will be interesting.

O. fasciatus Smith, Insect Life 1888, i, 18.

Head, thorax and primaries dull fuscous gray. Primaries with basal line single, distinct, black. Basal space to t. a. line paler, more ashen gray. T. a. line rather broad, single, black, outwardly oblique, making two large and not very prominent outward curves. T. p. line single, marked at costa, making a strong outward curve over reniform, then strongly incurved, interrupted by the white transverse band, again distinct below the reniform and with a slight inward curve to the inner margin. Claviform wanting. Orbicular rather small, round, narrowly outlined in black, somewhat paler than ground color. Reniform large, not very well defined, white, with a narrow fuscous crescent. Between reniform and t. p. line the ground color obtains and gives a deceptive appearance of the reniform in the broad white band. A narrow shade band crosses the outer part of median space, distinct and blackish on costa, less marked below. A broad, white, transverse shade over and including reniform, leaving a fuscous spot beyond reniform, limited inwardly by the t. p. line and almost extending to the s. t. line. S. t. line marked only by a series of sagittate black dashes shading off into the white band. Terminal space concolorous; a narrow terminal dark line. Fringes concolorous fuscous, narrowly cut with darker brown, a whitish

line at base. Secondaries dull smoky brown at base, outwardly limited by a black transverse band. Beyond this a broad white central band, the outer margin again broadly black. Fringes white, basally fuscous. Beneath both pairs of wings fuscous gray at base, outwardly limited by a black band; this followed by a broad white band and margins again broadly black. Head and thorax concolorous with basal space of primaries; abdomen a trifle paler. Exp. 1.10 inches; 27 mm.

Hab.—Nevada County, California (September).

A single ♀ in collection U. S. N. Mus. from Dept. of Agriculture.

The species is strongly marked and entirely unlike any other heretofore described. The common white transverse band is characteristic and renders the species readily recognizable. Its general appearance seems to refer it most nearly to the yellow underwings.

O. tenuifascia Smith, Insect Life, 1888, i, 18.

Head, thorax and primaries dull fuscous brown, the ordinary maculation of primaries distinct, though not prominent; blackish. Basal line present, black, with a narrow following pale line. T. a. line distinct, oblique, sinuate, black, preceded by an equally distinct pale line. Practically the line is geminate, the inner portion reduced to a few dark scales defining the intermediate pale shade. T. p. line distinct, geminate, inner line black, distinct, outer line punctiform, the intervening space white, the white line becoming broader toward the inner margin. As a whole, the line curves outwardly over the reniform and is nearly straight below vein 2. Claviform distinct, black margined, concolorous. Orbicular small, round, black ringed, with an inner white annulus. Between the ordinary spots the cell is blackish, and from this point the narrow median shade runs parallel with and close to t. p. line to the hind margin. Reniform rather small, narrow, normal in shape, not very distinctly outlined, first black margined, then with a paler annulus, centre of ground color of primaries. S. t. line irregularly, but not strongly dentate, narrow, whitish, interrupted, preceded by a series of small black spots, a few white scales in s. t. space opposite cell and a rather large, indefinite pale spot filling the space near hind margin. A row of black terminal lunules. Fringes dusky, cut with darker fuscous and with a fuscous line at base. Secondaries smoky at base, limited by a sinuate black band, then a narrow white band followed by the broad black outer margin. Fringes white. Beneath both pairs of wings smoky at base, with a common black median band, followed by a broader white band, the outer margin broadly black. Expands .88 inches; 22 mm.

Hab.—Colorado.

A single female in Mr. Tepper's collection; the species is an easily recognizable one. Its small size and the banded secondaries are unusual. The primaries are somewhat broader and shorter than usual, and the body somewhat more robust; the eyes are not very distinctly lashed.

Despite its somewhat abnormal appearance I believe the species correctly referred here.

Group ATRIFASCIATA.

Only a single species constitutes this group, unique in the broad black median band of primaries. The secondaries are white basally, with a very broad black outer band. The essential characters have been already pointed out and the more particular description of the species is as follows:

O. atrifasciata Morr. Proc. Acad. Nat. Sci. Phil. 1875, 431, *Metahadena*; Grt., Can. Ent. 1878, x, 234, *Homohadena*; Bull. Bkln. Ent. Soc. 1880, iii, 38, *Homohadena*.

Head and thorax deep sooty brown or blackish. Primaries bluish gray, the median space deep, rich, very dark brown or blackish, forming thus a broad transverse band, somewhat variable in width. The basal space is powdered with deep brown, the basal half line visible as a very narrow brown line. T. a. line marked only as the inner margin of the median band, outwardly curved and somewhat oblique, varying in the specimens. T. p. line similarly marked only as the outer margin of the median band, somewhat incurved from costa and again outwardly oblique below middle; the median shade thus broadest on costa, narrowest at middle, and again slightly broader at inner margin. The ordinary spots all wanting. The s. t. and terminal spaces are variably shaded and powdered with brown and the veins are more or less black marked; there is also a series of interspaceal narrow black lines. S. t. line diffuse, pale, marked by a preceding brown shade, which is broad and distinct on costa and narrows and becomes fainter toward the hind margin; the fringes are short, concolorous. Secondaries white basally, the margins and outer half blackish. Beneath, the primaries are smoky brown, the terminal space powdered with gray; secondaries as above. Expands 1.35—1.40 inches; 34—35 mm.

Hab.—Maine, New York (Adirondacks).

A very strongly marked species, at once recognizable by the distinct, blackish median space. The species is not rare where it occurs, but is not often taken. Mr. Hill took it in some numbers on fences in the Adirondacks and most of the specimens in collections are from him. The species is more plump and the vestiture somewhat heavier than in the typical forms, the collar with a distinct central ridge.

The genitalia are like those of the genus. The harpes have a roundedly oblique tip, inwardly fringed with spinules; the clasper arises as usual from the middle of inferior margin and abruptly narrows from the inner edge into a long, straight and acute spur, the whole extending about three-fourths across the harpe.

The species was made the type of the genus *Metahadena* Morr. Mr. Grote referred it to *Homohadena*, overlooking the distinct claw to fore tibia, strongly lashed eyes and other features which make it agree rather with this genus than with *Homohadena*.

Group TERMINALIS.

A single species also constitutes this group. It is peculiar in the maculation of primaries which have all the markings present, but fine, while there is a broad terminal shade through which the pale s. t. line is readily traceable. In appearance it is plump—allied to *atrifasciata* in that respect. The collar is also somewhat produced medially and the basal tuft is distinct; the species has no close allies in the genus and is isolated for that reason.

Further particulars will be given with the description of the species.

O. terminalis Smith, Insect Life, 1888, i, 19.

Head, thorax and primaries dull fusco-luteous, primaries with a broad blackish terminal shade. Basal line of primaries faintly indicated by a few black scales. T. a. line geminate, marked on costa by distinct black spots then becoming very faint, traceable principally by the paler inclosed space, and again becoming distinct below the internal vein; feebly dentate in its course; a blackish blotch preceding the line on internal margin. Orbicular small, round, pale ringed, centre concolorous. Reniform moderate in size, normal in shape, pale ringed, with a dusky lunule inwardly, else concolorous. Between these spots the median shade is marked by a black costal spot, thence continued as a narrow, sinuate, faint dusky line to the hind margin. T. p. line geminate, distinctly marked on costa thence interrupted, punctiform, marked by black or brown venular dots; outwardly curved over cell. S. t. line narrow, pale, interrupted, irregularly dentate. From the internal margin beyond the t. p. line an oblique blackish terminal shade extends to the apex, somewhat narrowing above the middle. Through this dark shade the s. t. line is picked out by pale scales. A row of black terminal lunules, preceded by pale defining scales. Fringes very long, with a central darker line, beyond which they are cut with blackish. Secondaries glistening white, somewhat smoky basally, and with a very broad black outer margin. Fringes white. Beneath, wings whitish, with a broad black terminal margin. Primaries with a whitish terminal line. Fringes white, on primaries narrowly cut with brown, becoming black at tip. Head with a brown frontal line, and a brown inter antennal tuft. Collar black tipped, and behind it the thorax is powdered with black scales. Abdomen very pale luteous. Expands 1.25 inches; 31 mm.

Hab.—Colorado.

A single ♀ in Mr. Tepper's collection. A distinct species; the collar is evidently produced medially, and there is an evident basal tuft. The dark terminal space is characteristic.

Since the above was written I have seen other specimens from the same State which agree perfectly with the typical specimen; there is not much opportunity for variation apparently.

Group LEVIS.

The species referable here have a peculiar *fascies* at once recognizable. The fringes are unusually long and even on both wings, the secondaries with rather well defined dark outer margins. The maculation of primaries is all distinct, the lines being geminate and defined, the s. t. line more or less punctiform and preceded by irregular black spots. The ordinary spots are well defined and marked by paler annuli; the color is gray, with a more or less evident luteous admixture.

Levis has a distinct yellowish shade to secondaries, and a deeper shade to primaries than the other species. The orbicular is oblique, oval, the reniform discolored and prominent. The species is very readily distinguished from the others by these characters.

Simplex lacks the distinct yellow shades, the orbicular is oval, but not oblique, the reniform concolorous, the spots preceding s. t. line are very distinct and sagittate.

Augustus has the orbicular round. It is a more distinctly cinereous species and the reniform is concolorous. The spots preceding s. t. line are not so prominent as in the preceding species.

Irrespective of all other characters the orbicular in these three species affords a safe distinguishing feature. It is oblique in *levis*, oval in *simplex*, and round in *augustus*.

Iricolor is at once obviously distinct from all the preceding by the very prominent and beautiful metallic shade to the dark blue scales of the primaries.

In brief the species are separable as follows:

- Secondaries with a decided yellowish shade; orbicular oblique, oval, reniform discolored **levis**.
 Secondaries without the yellowish tinge, smoky or dirty white.
 Reniform concolorous, orbicular oval, not oblique **simplex**.
 Reniform concolorous, orbicular round; color more cinereous..... **augustus**.
 Primaries marked and shaded with metallic dark blue scales..... **iricolor**.

O. levis Grt., Can. Ent. 1880, xii, 254.

Head, thorax and primaries dusty ochery with paler shadings. Primaries with the maculation distinct, neatly marked. Basal line distinct, geminate, inner line black, the outer fuscous, included space somewhat paler. A paler shade through the superior portion of basal space, variably distinct in the specimens at hand. T. a. line geminate, inwardly oblique from the costa, strongly and rather irregularly dentate; a narrow black line connecting it with the basal line. T. p. line geminate, inner line black, outer line somewhat incomplete, fuscous, included space paler, somewhat lunulate, a wide outward bend over reniform, and somewhat incurved below that spot. The claviform is distinct,

somewhat paler, black margined and narrowly white ringed. Orbicular oval, oblique, white ringed, with narrow black margin, the centre slightly paler. Reniform normal, of a good size, black margined, whitish filled, with a central ochery lunule. The cell between the spots is blackish, continued beneath across the wing as a rather narrow blackish shade line rather close to and parallel with the t. p. line. S. t. line pale, interrupted, somewhat punctiform, preceded by irregularly sized and formed black spots, and followed by smaller and less distinct spots. A row of black terminal lunules. Fringes long, whitish, an ochery line at base, and a central fuscous line. S. t. space with a well marked paler shade opposite cell, and again in the submedian interspace. The costal region is also paler in some specimens, the transverse lines marked by distinct black spots. The veins are somewhat pale marked to the t. p. line, and beyond that black marked. In some specimens pale rays accompany the veins and encroach on the terminal space. Secondaries whitish, with a more or less marked yellowish tinge, and with a well marked black border. Fringes white or yellowish. Beneath, primaries smoky, with an outer line, distinct about half way across the wing and a broad blackish outer margin. The ordinary spots are faintly reproduced. Secondaries as above, but paler. Head with black scales between the antennæ. Collar with a transverse black line at base and a fuscous line at middle, which is sometimes wanting. Expands 1.20—1.35 inches; 29—34 mm.

Hab.—Arizona, Colorado.

The Colorado specimens are darker in color than those from Arizona, and the latter have the secondaries nearly white, whereas in the Colorado specimens the yellow shade is distinct; the maculation varies somewhat in prominence, but is always distinct. The species is readily distinguished from its near allies by the distinctness of its maculation and the *oblique* orbicular.

The genitalia of the male have the harpe as usual, the tip very slightly oblique, inwardly fringed with a row of very fine spinules; the clasper is from about the middle of lower margin and extending about across the harpe somewhat dilated at its middle and gradually narrowing to a long acute point.

A type specimen is in the U. S. National Museum collection (coll. J. B. Smith); other specimens in various collections.

O. simplex Smith, *Insect Life*, 1888, i, 20.

Head, thorax and primaries powdery fuscous, the maculation distinct. Basal line distinctly traceable, geminate. T. a. line upright or slightly incurved, strongly dentate, geminate, the outer line black, inner line fuscous brown, included space somewhat paler. A narrow black line from base to t. a. line. T. p. line faintly geminate, inner line only distinct, black, slightly lunulate, exerted over reniform and somewhat incurved below. Claviform very long, almost crossing median space, black margined, with a pale inner line and concolorous centre. Orbicular longitudinally oval, pale ringed, concolorous. Reniform moderate in size, pale ringed, with narrow black margin, the centre somewhat paler. A faintly marked median shade between the ordinary spots, less marked below

median vein. S. t. line pale, interrupted, irregularly sinuate and dentate, preceded by a series of long sagittate interspaceal black dashes. A row of black terminal lunules. S. t. space pale at t. p. line, rapidly darkening to the s. t. line. The veins are paler through the darker parts of the wing and black marked beyond. Secondaries white, semi-transparent, with a distinct black outer border. Fringes white. Beneath whitish, with smoky black outer border. Head with an interantennal blackish line followed by a pale line. Collar with a black line inferiorly, black tipped and a whitish line below the black tip. Thorax also sprinkled with black scales. Expands 1.46 inches; 36 mm.

Hab.—Ashley Valley, Utah.

A single rather rubbed specimen without fringes to primaries in Mr. Henry Edwards' collection.

This species is closely allied to *levis*, the most obvious superficial distinction being found in the longitudinally ovate orbicular. The ground color is not ochreous and there are other minor differences in maculation as can be noted by comparing the description. I should scarcely, however, have described this specimen as distinct, but for the decided difference in the genital structure, which in this genus is so true to one type. The harpes are elongate, the inferior margin curving regularly and gradually to an acute junction with the superior margin, the inner edge of terminal margin fringed with long stout spinules. This is very different from the harpes in *levis*; the clasper, too, is different. It is even for two-thirds of its length, then the inner side is abruptly cut, leaving a long, slender, acutely terminated spur as the continuation of the outer margin.

The species holds an intermediate position between *levis* and *augustus*.

O. augustus Harvey, Bull. Buff. Soc. N. Sci. 1875, iii, 73, pl. 3, fig. 5; Grt., Bull. Geog. and Geol. Surv. iii, 176.

Head, thorax and primaries dark ashen or fuscous gray, powdery, varying somewhat in shade. Primaries with the maculation distinct, neatly cut. Basal line present, geminate, inner line black, outer line fuscous, included space somewhat paler than ground color. T. a. line upright or slightly oblique outwardly from costa, geminate, dentate, the outer line black, the inner fuscous, included space paler. T. p. line geminate, the lines narrow, the outer indistinct, slightly lunulate, outwardly curved over reniform and then rather evenly oblique to the inner margin. Claviform present, somewhat paler than ground color, not well defined, margined by a few black scales. Orbicular large, round, pale ringed, centred with a paler, more ochery fuscous. Reniform of the usual shape, pale ringed and centred as in the orbicular. The outer portion of median space is somewhat darker and the median shade is obscured and scarcely traceable in the majority of specimens. S. t. space pale at t. p. line, darkening to the rather broad, diffuse, pale, interrupted s. t. line, which is irregularly and somewhat prominently dentate on the veins. A few darker, irregular spots precede this

line in the lower part of its course. A row of dark fuscous terminal lunules. Fringes very long, pale at base, darkening outwardly, and there faintly cut with blackish. Secondaries white, somewhat iridescent, with a faint discal lunule, a narrow median line and a broad, smoky outer band. Fringes long and white. Beneath, the primaries are glistening, smoky and somewhat powdery outwardly, with an outer line distinct about half way across the wing, a dusky discal spot and a row of terminal lunules. Secondaries white, a small discal spot, a distinct narrow median line not reaching the internal margin; a narrow, somewhat indefinite and incomplete smoky outer margin, and a series of fuscous terminal lunules. Collar with a dusky line at base, and a similar line near tip, below which is a whitish shade. Thorax also with black scales intermixed. Expands 1.25—1.37 inches; 31—34 mm.

Hab.—Texas (October), Colorado.

This species, originally described from Texas, I have seen only from Colorado, quite a number of specimens having been taken of recent years in that State. The species is readily distinguished by the distinct maculation, pale color, round reniform and white secondaries, which show a distinct discal lunule, as well as a narrow outer line in addition to the usual dusky outer margin.

The harpes of the male genitalia are somewhat curved, narrowing toward tip and there somewhat truncate, the angles rounded; an oblique row of spinules at inner side of tip. The clasper rises from the middle of inferior margin and does not extend the full width of the harpe. It is even for about half its length, then narrows rapidly from the inner side and terminates in a long, acute point, resembling *simplex* somewhat in this respect, but with a different harpe.

O. iricolor Smith, Insect Life, 1888, i, 19.

Head, thorax and primaries somewhat pale luteous, the primaries more or less powdered with bluish black atoms which have an iridescent, metallic glitter. Basal line present, black, followed by a narrow pale line. T. a. line geminate, outer line black, inner line more or less punctiform, the included space pale. As a whole, the line is somewhat irregular, very slightly curved outwardly. At the inner margin the line is preceded by a large patch of metallic dark scales, which in one specimen crosses the entire wing and in the other is limited to the inferior third. Claviform small, pale, not defined; orbicular rather small, round, a little irregular, pale ringed, centre concolorous. Reniform moderate, upright, somewhat constricted medially, pale ringed; a somewhat fuscous median shade darkens the cell between the ordinary spots and continues as a narrower dark shade parallel and close to the t. p. line. T. p. line narrow, black, crenulate, interrupted, widely curved over the cell and then with a regular inward curve to the hind margin. The narrow black line is followed by a broader, more even pale line, from which point the s. t. space darkens and becomes metallic black to the irregular, pale and somewhat interrupted s. t. line; a row of terminal dusky lunules inwardly margined by pale scales. Fringes unusually long and pure white. Secondaries faintly yellowish, glistening, with a broad black border and

a distinct discal lunule. Fringes also pure white. Beneath, the wings are very pale whitish yellow with broad blackish outer margins, the discal spot of secondaries more distinct. Head with a few reddish scales between the antennæ. Abdomen like wings beneath. Expands 1.25 inches; 31--32 mm.

Hab.—Colorado.

Three specimens from Mr. Tepper; one ♀ in coll. U. S. N. Mus. (Smith coll.).

This is perhaps the most beautiful species of the genus, the metallic dark scales and the very long white fringes offering distinctive characters. The specimens differ considerably in the amount of metallic irroration, the one so covered as to darken the entire specimen, the other, and better specimen with the dark markings only, metallic. The species is most nearly allied to *augustus* Harvey.

Since the description was first published I have seen several other specimens none of which offer any new characters. The metallic scales are distinctive and are obvious in all the specimens.

Group HOMOGENA.

The species referred here have no strong band of union; they are all very distinct from each other and do not agree with any of the other groups. There is no one strong feature to unite them and negative characters only associate the species; they agree in not belonging to any other group. In all the normal maculation is distinctly traceable.

Saundersiana differs from all the other species in the distinctly geminate, even, dark median lines and strongly dentate s. t. line. The posterior thoracic tuft is darker, the claviform is distinct and there is a very even, distinct, upright median shade.

Behrensi has the lines also geminate, but much less distinct; the color is a very even, obscure fuscous and the maculation only slightly darker. The s. t. line here is punctiform, pale, and the body vestiture is thick. It has the appearance of a *Mamestra* allied to *chenopodii*.

Right here must belong *pernotata* Grote, with which I am unacquainted. It is said to lack the s. t. line and to have a solid black claviform. Mr. Grote compares it with *saundersiana*, to which indeed, from the description, it seems very close.

Glennyi differs from all the others by its sordid, powdery appearance, a yellowish fuscous shade extending over the whole insect; the

maculation is all present, but is not very distinct. The s. t. line is irregular, paler, preceded by a darker shade. It is larger than the preceding species.

Homogena is allied in maculation, but is much brighter and a somewhat smaller species; the lines are very distinct and are single. The basal space is paler than the median, the t. p. line followed by a whitish shade, darkening again to the s. t. line, which is irregular and very much as in *glennyi*, but much more distinct. It is not readily confounded with any other species.

Occata is a smaller species, of which I have seen only two specimens. Its salient feature is the strongly incurved t. p. line, the small, neatly marked ordinary spots, even median shade and paler basal and s. t. shades. The s. t. line consists of a series of white and black dashes, which are obscure in one specimen. Mr. Grote's figure of the species is a good one.

Mediana is deep ashen gray and has the appearance of a *Mamestra* allied to *anguina*. The lines are faintly marked, the s. t. very indefinite; the orbicular is unusually large with blackish ring and centre; the reniform is also dark, somewhat incompletely outlined, stained with reddish.

Fortis has the color and habitus of an *Homohadena*, as which it was described and now stands in our lists. It has the deep brownish fuscous color of that genus, somewhat paler occasionally, and the median lines are usually punctiform, rarely lunulate, with the venular dots stronger.

Despite the differences of *habitus* the genital structure remains constant in type.

A tabular statement of such a mixture is unsatisfactory and will not be presented. The above review, aided by the detailed descriptions, should be sufficient.

O. saundersiana Grt., Can. Ent. 1876, viii, 29.

Head, thorax and primaries grayish fuscous. Primaries with basal and s. t. space pale ash gray. Basal line fuscous, distinct, geminate. T. a. line with a slight outward curvature, very distinct, geminate, the inner line darkest, black. T. p. line bisinuate, the curvatures small, very even, distinctly geminate. S. t. line pale, very deeply and prominently dentate, the teeth entirely crossing the dusky terminal space and emphasized by blackish shades and dashes on both sides of the line. Claviform small, distinct, concolorous, black ringed. Orbicular round, rather large, ringed with fuscous, within which is a pale annulus. Reniform large, normal in shape, rather indistinctly defined, somewhat paler outwardly and inferiorly darker filled; median shade very distinct, rather nar-

row, even, crossing between the ordinary spots. Secondaries whitish basally, with a rather well defined outer blackish margin, an indistinct discal lunule and a faint extra discal line. Beneath, primaries smoky, secondaries much as above, the discal lunule and extra discal line better marked. Thorax with collar smoky or blackish, as is also the very distinct posterior tuft. Expands 1.12 inches; 28 mm

Hab.—Texas, Canada, Illinois.

A single male specimen is in the National Museum (Belfrage coll.) easily known by the very even, distinctly geminate median lines and the very prominently dentate s. t. line.

The genitalia are much as usual; the harpes are a trifle obliquely rounded at tip, which is inwardly fringed with spinules. From the middle of inferior margin arises the clasper, which narrows rather abruptly from the inner side and extends beyond the harpe in a long, acute and slightly curved spur.

The species is somewhat aberrant in the very distinct basal thoracic tuft, but otherwise fully agrees with the characters of the genus.

Mr. Grote's description of the species is somewhat different, but I can scarcely believe that it refers to another species. I have seen no specimens named by Mr. Grote himself and I present his description for comparison and as additional to my characterization. Should the present species really prove different it might be called *geminata*.

"Fore tibiae with a terminal claw. Allied to *Oncocnemis occata* from Texas and California. Differing as follows: Head and thorax black. Median space darker than basal and terminal spaces, which latter are washed with white. Median lines twice further apart inferiorly than in *occata*. Median lines even, not scalloped. Median shade black, not very diffuse. Ordinary spots larger; orbicular with an evident dark centre. The dentations of the s. t. line connected, followed by a vivid white line. Fringes wholly black, not checkered as in *occata*. Hind wings much as in *occata*; a terminal, vague, broad, blackish band, within which is seen the median line; fringes white. Beneath less brown than in *occata*. Expanse 28 mil."

Hab.—Canada, Illinois.

O. behrensi Grote, Bull. Buff. Soc. N. Sci. 1874, ii, 65; Bull. Geog. and Geol. Surv. iii, 116.

Head, thorax and primaries with an even, dull, deep ashen gray, over a yellowish ground. Primaries with the ordinary maculation present, the lines fine and hardly relieved. Basal line present, indistinct, geminate. T. a. line geminate, upright, sinuate rather than lunulate. T. p. line geminate, outer line somewhat diffuse and even, inner line slightly crenulate. Its course very much as usual, exerted over the reniform. The median shade is indistinct, diffuse, darkening the cell between the ordinary spots and then crossing the wing rather close to and parallel with the t. p. line. Claviform large, slightly paler, not defined.

Orbicular large, round, obscurely pale ringed, concolorous. Reniform large, concolorous, obscurely pale ringed. S. t. line pale, irregular, interrupted, preceded by a series of blackish spots of various forms and sizes. The terminal space dusky; a pale terminal line. Fringes with a sinuous darker line. Secondaries whitish toward base, dusky outwardly and with an indefinite terminal band. Beneath, primaries smoky, darker outwardly and with an outer dusky line not extending more than half way across the wing. Secondaries paler, powdery, with a distinct discal spot and an outer line. Collar with a basal transverse line and another near tip. Expands 1.12 inches; 28 mm.

Hab.—California (February).

In this species the color and maculation are obscure. Unlike *glennyi*, there is no powdering, so noticeable in that species, and the lines are distinctly double.

The only male examined lacked the abdomen and the genitalia could therefore not be examined.

O. pernotata Grt., Can. Ent. xv, 25.

"Allied to *saundersiana*; base of primaries washed with light gray; t. a. line double, even, dark brown, slightly curved. Orbicular and reniform subequal, completely defined, gray, with central mark; claviform solid, black. T. p. line double, a little uneven, running inwardly and nearing t. a. line on internal margin. S. t. line wanting. Veins marked with black terminally. Median and subterminal fields washed with light gray; terminally the wing is brownish. Collar light yellowish gray; head darker. Fore tibiae armed with a claw. Eyes naked. Hind wings with broad, diffuse, blackish border and white interlined fringe. Beneath, slightly yellowish with broad borders to both wings; a dot and fragmentary inner mesial line on hind wings. Thorax gray; abdomen yellowish gray."

Hab.—Arizona. Collection B. Neumoegen.

O. glennyi Grt., Bull. Buff. Soc. Nat. Sci. 1873, i, 141, pl. 4, fig. 17.

Dull powdery fuscous, the color even over the head, thorax and primaries. Maculation of primaries distinct, but not prominent. Basal line black, single, not well marked. T. a. line black, indistinctly geminate, the outer line only distinct, its course outwardly oblique, with three obtuse outward angulations. T. p. line apparently single, outwardly exerted over reniform, toothed on the veins. Median shade barely traceable through the outer portion of median space. Claviform rather short, concolorous, imperfectly outlined by black scales. Orbicular rather large, round, concolorous, black ringed. Reniform large, concolorous, incompletely black ringed, preceded by a dusky shade; a row of fuscous terminal lunules. Fringes moderate in length, concolorous. Secondaries pale whitish fuscous basally, with a somewhat indefinite discal lunule, a narrow outer line, and a broad, somewhat undefined outer band. Wings beneath powdery fuscous, with small discal spot, somewhat punctiform outer line, incomplete on primaries and a diffuse outer dusky band. Thorax with a basal dark line and a dark line near tip. Expands 1.37—1.50 inches; 34—38 mm.

Hab.—Colorado.

The uniform powdery fuscous color is distinctive, the markings while all present are not prominent.

The harpes of male are moderate, somewhat curved, the lower margin curving obliquely to an acutely rounded tip, the innerside fringed with spinules. The clasper is an unusually long, slender, somewhat curved hook, obliquely crossing the harpe and extending somewhat beyond it. The species is unique in this respect.

It seems to be rare.

O. homogena Grote, Bull. Geog. and Geol. Surv. iii, 800.

Head, thorax and primaries pale, somewhat yellowish gray. Primaries with basal space evenly pale, powdery. Basal line single, black, distinct. T. a. line broad, black, single, even, oblique, with a slight outward curve. T. p. line narrow, single, rather evenly curved over the reniform, with small outward teeth on the veins below that point. Median space darker than the remainder of the wing. Claviform marked by a small, irregular black patch on the t. a. line. Orbicular rather small, round, pale, edged with black scales. Reniform large, of the usual shape, pale, but not discolorous, narrowly and incompletely edged with black scales. A darker, diffuse, and irregular median shade between the ordinary spots and somewhat inwardly oblique, unusually close to the t. a. line. S. t. space whitish powdered beyond t. p. line darkening to the s. t. line, which is very distinctly defined by this dark shade. It is very irregular and diffuse, marked with white scales and not distinctly defined from the terminal space; a row of fuscous terminal lunules. Fringes gray, cut with fuscous. Secondaries dirty white with a faint discal lunule and a somewhat well defined smoky outer band. Beneath, the primaries are smoky, paler toward inner margin, darker outwardly. Secondaries very much as above, but more powdery. Head with a frontal transverse dark line. Collar concolorous with basal space of primaries, and with a dusky basal line. Thorax darker, more mixed with blackish scales. Expands 1.25—1.40 inches; 31—35 mm.

Hab.—Colorado, Nevada.

A well marked species which I have seen from Colorado only. The strongly defined median space and the pale basal space limited by the broad, even black t. a. line are distinctive.

The genitalia of the male have the harpes somewhat curved, ending in a regularly curved, oblique tip, which is well fringed with spinules at innerside; the clasper extends rather more than half way across the harpe, and is gracefully curved, gradually narrowing from the innerside to an acute point.

O. oecata Grt., Tr. A. E. S. 1874, v, 114, *Cleophana*: Bull. Buff. Soc. N. Sci. 1875, iii, 9 and 16, pl. 2, fig. 6, *Cleophana*; id. iii, 87, *Oncocnemis*; Stett. Ent. Zeit. 1876, v, 37, 136, *Oncocnemis*.

“♀.—The eyes are naked; the frontal vestiture converges from the sides, but conceals no clypeal protuberance. Tibiæ unarmed, but the fore tibiæ have a

blunt and short claw on the inside and a very short process outwardly. Collar pointed medially. Abdomen untufted. Collar above black, below gray-brown, tipped with pale gray brown. Thorax pale gray brown. Anterior wings gray-brown. Basal half line indicated. Median veins obsoletely geminate, very approximate below the median vein. Median shade black, very diffuse, almost entirely filling the median space below the vein and bringing into relief the small concolorous claviform. Ordinary spots concolorous, small, subequal; subterminal line consisting of whitish streaklets and points preceded by black longitudinal linear marks of unequal length and distinctness; subterminal space shaded with whitish gray, especially below vein [5]. Fringes checkered black and brown. Hind wings whitish at base with soiled veins and rather broad, shaded and even blackish hind borders. Abdomen pale. Beneath with a common line broken into dots on the secondaries which are whitish, irrorate on costal region and have diffuse blackish borders. Head black, with a pale inter-antennal line and pale oral squamæ and palpi. Expands 1.10 inches; 27 mm."

Hab.—Texas, California; April and May.

The above is Mr. Grote's description; the only specimen at hand (a ♀) is somewhat rubbed and agrees fully with Grote's characterization. Mr. Grote elsewhere corrects his generic reference stating that the collar was normal and not as above described.

O. meadiana Morr., Proc. Acad. 1875, 60; Grote, Bull. Geog. and Geol. Surv iii, 117.

Head, thorax and primaries bluish ash gray. Primaries with basal line not traceable. T. a. line regularly curved outwardly, single and not very definite, marked rather by the somewhat darker median space. T. p. line incurved from the costa, cutting the inferior portion of reniform and narrowing the median space. Claviform wanting; orbicular well sized, black ringed, and with a black centre, else concolorous. Reniform moderate in size, incompletely ringed, stained with reddish; a distinct, somewhat diffuse median shade, crossing the centre of the space through the orbicular. S. t. line pale, irregularly interrupted, preceded and followed by irregular and not very definite blackish marks and shades; a series of black terminal lunules; a white line at the base of the otherwise concolorous fringes. Secondaries whitish, with an indefinite, smoky outer border. Beneath, primaries smoky, somewhat pale powdered outwardly. Secondaries white, outwardly smoky, very much as above. Expands 1.12 inches; 28 mm.

Hab.—Arizona.

This species seems rare, and I have seen the ♀ type only from Mr. Tepper's collection. It is extremely close to *occata* in all respects, the difference being chiefly in the larger orbicular and stained reniform. The median space also is not so dark.

O. fortis Grt., Can. Ent. 1880, xii, 257, *Homohadena*.

vorax Behrens, Papilio, 1884, iv, 21, *Agrotis* (larva only); Smith, Papilio, iv, 114, *Polia* (desc. imago).

"Of a dusky fuscous, paler than [*Homohadena*] *incomitata*. Basal dash obsolete; no dash on median space. Median lines accentuated on the veins, very

narrow, black and single, anterior line perpendicular. Posterior line with a rather long and narrow extension beyond the disc; lunulate between the veins, which are marked with black points; a succession of pale marks preceded by very slight dashes indicates the subterminal line; a row of terminal black points. Fringes shaded, paler than the wing. Hind wings white, subpellucid; the nervules soiled; a vague terminal fuscous shading; fringes whitish. Head and collar darker shaded than the thorax, dusky fuscous. Stigmata indicated by paler shading; orbicular ovate, elongate; reniform moderate, upright; claviform indicated. Expands 1.60 inches; 40 mm."

Hab.—Nevada.

The above is Mr. Grote's description, and it excellently characterizes the type (a female) in Mr. Tepper's collection. A series of California specimens doubtlessly the same species, but forming the types of *Polia vorax* Behrens, differ sufficiently to induce a repetition of that description:

"Primaries even, dark brownish gray; stigmata obsolete; transverse lines barely indicated by black venular dots; a slightly darker s. t. shade, intensified into blackish on the veins; an interrupted lunate terminal line, or more properly a series of lunate terminal spots. Fringes yellowish at base, else concolorous. Secondaries pearl-gray, veins and outer margin more smoky; a yellowish line at base of fringes. Beneath, primaries glistening smoky gray, paler on disc; secondaries as above, a transverse line of venular dots beyond the middle. Head, palpi and collar dark red-brown; thorax concolorous with primaries; abdomen concolorous with secondaries. Expands 1.50—1.60 inches; 39—40 mm."

Hab.—California.

The species was locally quite common one year, but seems not to have been taken in any numbers before or since; the unfortunate generic reference of Mr. Behrens' species, for which I am responsible, was caused by the defective condition of the specimens, which caused me to overlook the armature of the fore tibia. The heavily lashed eyes induced the reference, which was felt at the time to be a questionable one. Mr. Grote's type, otherwise perfect, also lacks the fore legs. Other specimens since seen show the claw distinctly, and so though closely allied in appearance to some species of *Homohadena*, it must find a place here unless a new genus be created for its reception. In view of the present composition of the genus this is scarcely advisable. Unfortunately no male has been available for dissection.

Group CHANDLERI.

The species referred here all agree in the ashen gray ground color, over which the wing may be fuscous, luteous, or with blackish powderings. The transverse lines are obsolete, the claviform is long and narrow and connected with base by a slender line; the orbicular is

narrow, elongate and sometimes fused with the reniform; the s. t. line is pale, interrupted and irregular, preceded by sagittate black dashes, which are placed in a pale halo. The species are thus distinguished from *cibalis* and *gracillima* in which there is a decided and continuous dark shade preceding the s. t. line.

Of the species placed here *chandleri*, the type of the group, is darkest, the markings most contrasted; the ordinary spots are fused, and the secondaries have the black margin distinct.

Riparia, long considered a variety of *chandleri*, is readily distinguished by the luteous shading and the distinctly separated ordinary spots; the secondaries have the outer margin undefined, smoky. The underside in *chandleri* has the wings with definite dusky outer margins, while in *riparia* and *major* the disc is smoky, and outwardly the wing paler.

Major, which is really much closer to *riparia* than is *chandleri*, differs from both by the very even, powdery gray of primaries; the markings are very illy defined and the ordinary spots nearly colorous and not fused. The secondaries are inclined to be smoky throughout and the outer dusky margin is not defined.

Aqualis Grote is unknown to me. Mr. Grote says it resembles *chandleri*, but the interspaceal black dashes are not interrupted by a s. t. line, which is said to be wanting. It is therefore essentially different from all the preceding species in which this line is well marked.

In synoptic from the species are separable as follows:

Subterminal line distinct.

Ordinary spots fused, primaries dark **chandleri.**

Ordinary spots distinctly separated.

Primaries luteous gray, the ordinary spots very distinctly pale ringed.

riparia.

Primaries even, dark ash-gray, the ordinary spots not well defined.. **major.**

Subterminal line wanting..... **aqualis.**

Belonging here, but not readily placeable in the series without autoptic acquaintance, is *oblita* Grt., which I have not seen. The s. t. line and spots are as in *chandleri*, the claviform very long. It is not distinctly stated whether or not the ordinary spots are in some way joined, but the reniform has an inferior spur making it L shaped.

O. chandleri Grt., Bull. Buff. Soc. N. Sci. 1873, i, 107, pl. 3, fig. 9; id., 1875, iii, 87; Bull. Geog. and Geol. Surv. iii, 117.

Head, thorax and primaries rather dark fuscous gray, the markings distinct, white and black. Ordinary lines marked only on costa, the t. p. line sometimes traceable for its full length across the wing, then very fine, lunulate, widely

exserted over reniform; a black longitudinal line at base, reaching into the elongate narrow orbicular, which almost crosses the median space, and is distinctly black ringed. It is whitish, with a central dusky line. Orbicular elongate, confluent with the somewhat triangular reniform; the combined spot is black margined, then white ringed, the centre a trifle paler than the ground color. Through the subterminal space is an oblique, diffuse, pale shade. T. p. line white, interrupted, strongly dentate, preceded by a series of sagittate black dashes, which are narrowly and somewhat indefinitely pale margined; a row of terminal black lunules. Fringes pale, cut with fuscous, and with a central line of same color. Secondaries white at base, with a more or less visible discal lunule and a distinct, broad, blackish outer margin. Fringes white. Beneath white, powdery, with broad black margins on all wings. Collar with a basal and terminal blackish line; thorax black powdered. Expands 1.25—1.35 inches; 31—34 mm.

Hab.—Colorado, Nevada.

A very distinctly marked species, readily recognizable by the confluent ordinary spots and the dark and light contrasting maculation. The genitalia are somewhat peculiar; the harpes are normal with a rounded oblique tip inwardly fringed with small spinules. The clasper is broad, very decidedly concave and dilated at middle, and as abruptly narrowed to an acute tip; very different from all other species in that respect.

O. riparia Morr., Can. Ent. 1875, vii, 213, *Oncocnemis*, var. *chandleri*; Grt.; Bull. Surv. iii, 117, var. *chandleri*; Can. Ent. 1880, xii, 256 = *chandleri*; Bull. Buff. Soc. N. Sci. 1876, iii, 87 = *chandleri*; Stett. Ent. Zeit. 1876, v, 37. 117 = *chandleri*; Pap. 1880, i, 34, an. sp. dist.?; Tepper, Bull. Bkln. Ent. Soc. 1879, i, 31 (locality and habits).

Head, thorax and primaries very pale luteous gray. Primaries with the ordinary lines lost or but faintly marked on costa. A longitudinal black line from base terminating in the long narrow claviform which is white marked and narrowly defined by black scales. Orbicular very long, with very narrow defining ring of black scales, a well marked white ring and a central concolorous line, sometimes also marked with black scales. Usually this spot is well separated from the reniform, rarely it touches it, and in no specimen seen by me do the spots become confluent as in *chandleri*, though this may happen. Reniform moderate in size, hardly defined, white marked superiorly. S. t. line a more or less interrupted series of white spots, preceded by sagittate black or fuscous spots, which are usually edged with indefinite white shades. This is very variably distinct, one specimen lacking all but a single white margined spot, while another has an almost continuous line. No distinct terminal lunules. The costal region is usually powdered with white, and there is sometimes a whitish shade through the s. t. space. Secondaries white, with a variably distinct dusky outer border, the entire wing sometimes becoming smoky. Beneath white powdery, primaries a little smoky outwardly and on disc, secondaries with a discal lunule. Collar whitish, with luteous gray tips, and less distinct basal line. Expands 1.30—1.50 inches; 33—37 mm.

Hab.—Long Island and Buffalo, N. Y.; Isle of Shoals, Mass.

This very distinct species was first described by Mr. Morrison as a local form of *chandleri*, and Mr. Grote for some time was not inclined to grant it even varietal rank. In his later papers he queries its being a variety and in the new Check List it appears as a good species. In this latter opinion Mr. Grote is correct. The species is readily separated by the ground color, which is constant, by the fact that the ordinary spots are not confluent, by the indefinite band of secondaries, and lastly by the very different genitalia. The harpes are not unlike that of *chandleri*, but the clasper is rather short, sides parallel to near tip, where it abruptly narrows from inner side and terminates in a moderately long, curved, acute spur. Mr. Tepper has found the specimens in crevices of bath-houses along the beach of Long Island. It is not common.

O. major Grt., Pap. 1880, i, 33.

curvicollis Grt., Can. Ent. 1883, xv, 10.

Head, thorax and primaries ash-gray, variable in depth. Primaries with the transverse line visible only on costa, else obsolete; a narrow variably distinct black longitudinal basal line reaching into the elongate claviform which is narrowly black ringed and may be either concolorous or distinctly paler than the ground color. Orbicular elongate, somewhat dilated outwardly or clavate, not reaching the reniform in the specimens before me. Reniform moderate, normal in form, more or less distinctly, but always very narrowly black ringed, concolorous, or slightly paler, sometimes superiorly only. S. t. line pale, interrupted, more or less punctiform, preceded by a more or less evident series of black or fuscous sagittate marks indistinctly pale ringed. No evident terminal lunules. Fringes fuscous, cut with pale; the veins are more or less marked with black scales. Secondaries smoky fuscous, paler basally; in some specimens whitish, with an indefinite smoky outer border. Beneath, primaries smoky basally and on disc, whitish outwardly. Secondaries paler, white, powdery with a variably distinct discal spot and a punctiform outer line. Collar with base and tips dusky, centrally paler. Expands 1.30—1.40 inches; 33—35 mm.

Hab.—Arizona, Colorado.

This species varies somewhat in the depth of the gray ground color and consequent distinctness of maculation, but not otherwise. The characters given by Mr. Grote to separate *curvicollis* from *major*, are evanescent and a comparison of types proves them identical. It is regrettable that the name *curvicollis* cannot be retained since it refers to a character more or less marked in most specimens, while *major* conveys an erroneous impression of size. I regret that the genitalia could not be well studied. The harpes are very like those of *O. glennyi*, while the clasper, which was detached and broken,

seems to be very broad at base, suddenly narrowed to a rather slender, somewhat curved process; the whole bearing an odd resemblance to a butter scoop.

O. aqualis Grt., Papilio 1880, i, 33, *Oncocnemis*.

"♀.—Eyes naked; fore tibiae with a claw. Related to *chandleri*, but stouter. Fore wings bluish white, gray over blackish; all the lines obliterate; subterminal line wanting. The gray concolorous stigmata with difficulty perceived; all three present; veins obsoletely marked; a distinct series of black interspaceal terminal lines or streaks. Hind wings soiled, slightly iridescent, fringes whitish, interlined. Collar light gray, dusky behind, narrowly lined in front; head blackish. Beneath paler, discal spots present; hind wings whitish, irrorate, with a dotted exterior line feebly marked. Expanse 38 mm.

"*Hab.*—California.

"This Californian form differs by the black interspaceal dashes not being interrupted by a transverse pale shade which only shows in *chandleri*, where it cuts the dashes, but in var. (?) *riparia* broadens into a whitish, diffuse, s. t. line."

O. oblita Grt., Bull. Surv. iii, 117.

"Fore tibiae with a short claw; fore wings hoary gray, with pale brown shades on disc across the reniform and on submedian interspace. Lines obliterate. Orbicular elongate, with fine white annulus. Reniform dark, narrow and lunate above, below joined to a white patch on median vein, bordered with dark scales above and stretching backward so that the whole spot is L-shaped. Claviform curved, very long, reaching to the t. p. line, bordered with white, wide and prominent. T. p. line barely indicated by a gray shade, produced opposite the cell, curved inwardly below the median vein; subterminal line composed of blackish spots in a whitish intervenular shade situated very near the margin. Hind wings pale fuscous with white fringes. Thorax and head gray, being composed of black and white scales. Abdomen pale fuscous; fore wings pointed at apices, with straight costal margin. Wings hoary beneath. Expanse 30 mil.

"*Hab.*—Nevada; from Dr. J. S. Bailey. In color and ornamentation this species resembles the genera *Morrisonia* and *Actinotia*. In its present position it comes nearest to *O. chandleri*."

Group GRACILLIMA.

The two species which are rather arbitrarily separated under this title agree in pale gray color, obsolete median lines, very long claviform, fused ordinary spots and very prominent subterminal shade. As compared with the other species the primaries have the apices somewhat produced and the species seem slighter; they are closely allied to the species of the *chandleri* group, differing at a glance by the prominent s. t. shade as well as the somewhat produced wings.

Cibalis is larger and darker, the reniform dark filled.

Gracillima is small, paler, the reniform scarcely traceable—*i.e.*, incompletely defined.

O. cibalis Grote, Can. Ent. 1880, xii, 244.

Head, thorax and primaries ash-gray, primaries with somewhat luteous shadings. Median lines marked on costa only; a longitudinal black basal line reaching into the long, narrow claviform which is narrowly outlined with black scales and somewhat paler. Orbicular narrow, elongate, connected with the moderate upright reniform, which is similarly pale ringed and is darker than the ground color; a dusky shade on costa over the reniform. S. t. line pale, oblique and somewhat irregular, preceded by a very even distinct brown shade. Through the s. t. space the luteous shade is most distinctly visible between the veins; an even, continuous black, terminal line. Fringes concolorous, a pale line at base. Secondaries whitish, somewhat iridescent, with distinct discal lunule and an indefinite outer smoky border. Beneath primaries smoky, darker on disc and with a distinct discal lunule. Secondaries whitish, powdery, with a narrow discal lunule. Collar with a broad brown basal and terminal line, the central space with a yellowish tinge. Expands 1.37 inches; 34 mm.

Hab.—Colorado.

This species is readily distinguished by the distinct brown s. t. shade in combination with the fused ordinary spots, obsolete transverse lines, and larger size; the only other species similarly marked being very much smaller.

I have not been able to examine the ♂ genitalia very closely; the harpes are very much as in *chandleri*; the clasper I have been unable to make out. This species appears rare, very few specimens being known in collections.

O. gracillima Grt., Can. Ent. 1881, xiii, 231.

Head, thorax and collar pale, whitish gray. Primaries with the median lines obsolete, barely marked on costa. Claviform elongate narrow, reaching from base to the s. t. shade, narrowly black margined. Orbicular narrow, elongate, fused with the small, upright and indefinite reniform. The two spots narrowly black ringed. S. t. line pale, irregular, preceded by an obvious brown shade, broken by black cuneiform spots about the middle; a paler shade precedes this s. t. shade superiorly. In the terminal space the s. t. line is followed by small, irregular dusky spots; a narrow and very even black line through the terminal space, beyond which the wing is more fuscous gray to the white line at base of fringes. Secondaries subpellucid with faint traces of a mesial band and a narrow line at base of fringes from which a smoky shade extends irregularly and indefinitely inward. Beneath, primaries smoky, secondaries white with a broken outer line and a dusky terminal line. Collar with a narrow basal and terminal line. Expands .75 inch.; 19 mm.

Hab.—Arizona.

This little species is recognizable by its size alone as well as its resemblance to *cibalis* in the prominent s. t. shade. The genitalia are unlike those of the other species; the harpes are long and narrow, the tip oblique and somewhat rounded, inwardly fringed with spinules. The clasper is corneous, and consists of a rather strong, moderately long and slightly curved hook or process, the base of which is traceable to the base of the harpe.

Group ATRICOLLARIS.

The salient feature of the species referred to this group is the black longitudinal streak or shade of the primaries; the median lines are lost, the maculation is linear, the ordinary spots are indefinite—all as in the preceding groups, but an entirely different appearance is given by the longitudinal black shading, which in *atricollaris* extends from base to outer margin through the cell, and in *griseicollis* from the reniform outward. The latter species is not known to me in nature and may not be as close an ally of *atricollaris* as Mr. Grote considers it.

The genus *Copihadena* has been proposed for *atricollaris*, which in the narrower wings and different type of maculation seemed to have a fair basis. Mr. Grote has suppressed the genus, however, and perhaps with justice.

O. atricollaris Harr., Buff. Bull. 1874, ii, 273, *Homohadena*; Morr., Can. Ent. 1875, vii, 91, *Copihadena*; Grt., Buff. Bull. 1875, iii, 73, *Oncocnemis*; Bull. Geog. and Geol. Surv. iii, 117, *Oncocnemis*; Pap. 1880, i, 34, *Oncocnemis*.

Head, thorax and primaries gray, with fuscous shadings and powderings. Primaries with all the transverse lines lost, or faintly marked on costa only; a prominent black longitudinal shade band through the centre of the wing from base to outer margin, forming the most obvious and characteristic feature of the maculation; a small white patch at extreme base. Claviform distinct, black ringed, paler filled, somewhat obscured basally by the dark shade. Orbicular narrow, elongate, fused with the small upright reniform; the spots faintly outlined in fuscous, more or less obscured by the longitudinal shade; a series of terminal, black interspaceal lines cutting the otherwise concolorous fringes. Secondaries pure white, in the male with a narrow terminal line only, in the female with an indefinite fuscous outward shading. Beneath whitish, powdery, the primaries with a smoky outward shading. Head blackish powdered, with an inter-antennal white line. Collar with a distinct black line at base, above which is a distinct white line, the tip fuscous. Exp. 1.10—1.15 inch.; 27—29 mm.

Hab.—Texas, Arizona.

The species is common, and is at once recognizable by the marked black longitudinal shade.

The harpes of male are rather broad at middle, narrowing rapidly to a narrow, somewhat rounded tip, which is inwardly fringed with spinules. The clasper arises from the middle of inferior margin, extends about three-fourths across the harpe, is then cut abruptly from the inner edge, the outer produced into a moderately long, somewhat curved, acute spur. In the male, too, the primaries are decidedly narrower than in the female, or in the more typical species of the genus.

O. griseicollis Grt, Can. Ent. 1882, xiv, 19.

"Allied to *atricollaris*, but smaller; the collar entirely whitish gray, head blackish. Eyes naked; the short fore tibiae with a terminal claw; gray, of a whitish tone; under the glass the surface of primaries is whitish, sparsely mixed with black scales; the markings hardly visible to naked eye; under the glass the black, perpendicular, thread-like t. a. line is seen, and attached to it a sub-rounded, enclosed concolorous spot, the claviform. Similarly the concolorous orbicular and reniform may be seen ringed with fine black circles, the stigmata subequal, orbicular round, reniform upright, hour-glass shaped. Median space narrow, t. p. line indicated; a black dash from the reniform outward tapering to external margin. Similar fine interspaceal shades give the terminal space a slightly rayed appearance. Hind wings whitish, subpellucid. Beneath pale. Expanse 25 mil.

"*Hab.*—Arizona.

"This species is interesting as affording an ally to *atricollaris*."

List of the Species of **ONCOCNEMIS** Led.

- | | |
|------------------------------|-------------------------------|
| ? | 14. <i>pernotata</i> Grt. |
| 1. <i>hayesi</i> Grt. | 15. <i>glennyi</i> Grt. |
| 2. <i>dayi</i> Grt. | 16. <i>homogena</i> Grt. |
| 3. <i>mirificalis</i> Grt. | 17. <i>occata</i> Grt. |
| ? | 18. <i>meadiana</i> Morr. |
| 4. <i>fasciatus</i> Smith. | 19. <i>fortis</i> Grt. |
| 5. <i>tenuifascia</i> Smith. | <i>vorax</i> Behr. |
| ? | ? |
| 6. <i>atrifasciata</i> Morr. | 20. <i>chandleri</i> Grt. |
| ? | 21. <i>riparia</i> Morr. |
| 7. <i>terminalis</i> Smith. | 22. <i>major</i> Grt. |
| ? | <i>curvicollis</i> Grt. |
| 8. <i>levis</i> Grt. | 23. <i>aqualis</i> Grt. |
| 9. <i>simplex</i> Smith. | 24. <i>oblita</i> Grt. |
| 10. <i>augustus</i> Harv. | ? |
| 11. <i>iricolor</i> Smith. | 25. <i>cibalis</i> Grt. |
| ? | 26. <i>gracillima</i> Grt. |
| 12. <i>saundersiana</i> Grt. | ? |
| 13. <i>behrensi</i> Grt. | 27. <i>atricollaris</i> Harv. |
| | 28. <i>griseicollis</i> Grt. |

EXPLANATION OF PLATE VIII.

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|-----|----------------------|-------------------------|
| 1. | Harpe and clasper of | <i>O. hayesi.</i> |
| 2. | " " | <i>O. dayi.</i> |
| 3. | " " | <i>O. mirificalis.</i> |
| 4. | " " | <i>O. atrifasciata.</i> |
| 5. | " " | <i>O. levis.</i> |
| 6. | " " | <i>O. simplex.</i> |
| 7. | " " | <i>O. augustus.</i> |
| 8. | " " | <i>O. saundersiana.</i> |
| 9. | " " | <i>O. glenneyi.</i> |
| 10. | " " | <i>O. homogena.</i> |
| 11. | " " | <i>O. chandleri.</i> |
| 12. | " " | <i>O. riparia.</i> |
| 13. | " " | <i>O. major.</i> |
| 14. | " " | <i>O. cibalis.</i> |
| 15. | " " | <i>O. gracillima.</i> |
| 16. | " " | <i>O. atricollaris.</i> |
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